430 Rec'd PCT/PTO 2 2 SEP 2000.

SEQUENCE LISTING

Applicant name

: Japan Science And Technology Corporation

Title of invention

: Method for transforming plant, the resultant

plant and gene thereof

File reference

: JA908155

Application

: International application filed on March 24, 1999

Filing date

March 24, 1999

Priolity application: JR Patent application No. 10-96637

Priolity application filing date: March 24, 1998

Number of SEQ ID Nos: 34

SEQ ID No.: 1

Length

: 2092

Type

: nucleic acid

Strandness: double

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: modified base

SEQ:

GAATTCTCTA GACTCCACCA TGGTTAGAAC CAGAGTCCTT TTCTGCCTCT TCATCTCTTT

60

CTTCGCTACA GTCCAATCGA GCGCTACACT CATCTCCACT TCATGCATTT CTCAGGCTGC

ACTGTACCAG TTCGGATGCT CAAGCAAGTC AAAGTCTTGC TACTGCAAGA ACATCAATTG

1 /25

M Charles and St. I'll

GCTCGGAAGC GTCACTGCAT GCGCTTATGA GAACTCCAAA TCTAACAAGA CTCTGGACTC 240 CGCTTTGATG AAACTTGCCA GCCAATGCTC AAGTATCAAG GTTTACACAC TGGAGGACAT 300 GAAGAACATC TACCTTAATG CAAGTAACTA CCTTCGCGCT CCTGAGAAAT CCGATAAGAA 360 GACAGTTGTT TCACAACCGT TGATGGCAAA TGAGACGGCC TATCACTACT ACTATGAGGA 420 AAACTATGGG ATCCACTTGA ATTTGATGCG ATCTCAATGG TGCGCATGGG GCCTCGTCTT CTTCTGGGTC GCAGTCCTTA CCGCCGCAAC TATCTTGAAC ATTCTCAAAC GCGTATTCGG 540 CAAGAACATT ATGGCAAATT CTGTTAAGAA GTCTCTTATC TACCCAAGCG TTTACAAAGA 600 CTACAACGAG AGAACTTTCT ATCTTTGGAA ACGTTTGCCA TTCAACTTTA CAACTCGAGG 660 CAAAGGACTC GTAGTTCTTA TCTTTGTCAT TCTGACTATT CTCTCACTCT CTTTCGGACA 720 TAACATCAAG TTGCCACATC CTTACGATAG ACCTAGATGG AGAAGATCAA TGGCATTCGT CTCACGCCGT GCTGACTTGA TGGCAATCGC TCTTTTCCCC GTGGTGTACC TTTTCGGTAT 840 CCGGAACAAC CCCTTCATCC CAATCACCGG ATTGAGCTTT AGTACTTTCA ACTTTTACCA 900 CAAATGGTCA GCATACGTCT GCTTCATGTT AGCCGTCGTC CATTCAATCG TTATGACCGC 960 TTCAGGAGTT AAACGAGGAG TATTCCAGTC TCTTGTAAGG AAATTCTACT TCAGATGGGG 1020 AATAGTAGCC ACAATTCTTA TGTCCATCAT CATTTTCCAG TCCGAGAAGG TCTTCAGGAA 1080

CCGAGGTTAT GAAATCTTCT TACTTATTCA CAAAGCCATG AACATCATGT TTATCATAGC 1140 TATGTATTAC CATTGCCACA CACTAGGATG GATGGGCTGG ATCTGGTCCA TGGCTGGCAT 1200 CCTCTGCTTC GACAGGTTCT GCCGAATTGT ACGTATCATC ATGAACGGAG GTCTTAAGAC 1260 CGCCACTTTG TCGACCACAG ATGATTCTAA CGTTATCAAG ATCTCTGTCA AGAAGCCTAA 1320 GTTCTTCAAG TATCAAGTGG GAGCATTTGC CTATATGTAC TTTCTTTCAC CAAAATCAGC 1380 CTGGTTCTAC AGTTTTCAAT CTCATCCCTT CACAGTCCTA TCAGAAAGGC ACAGAGATCC 1440 TAACAACCCA GATCAACTAA CTATGTACGT CAAAGCTAAC AAGGGCATTA CGAGAGTACT 1500 TCTTAGCAAA GTTCTAAGCG CTCCAAACCA TACCGTTGAT TGCAAGATTT TCTTAGAGGG 1560 ACCATATGGC GTAACTGTCC CTCACATTGC CAAACTTAAG AGAAATCTAG TAGGAGTAGC 1620 TGCGGGCCTC GGCGTGGCAG CCATCTACCC CCATTTCGTA GAATGCCTTA GATTGCCTAG 1680 CACTGATCAA CTGCAGCACA AGTTCTACTG GATCGTCAAC GACCTTAGTC ACCTTAAGTG 1740 GTTCGAAAAC GAGCTACAAT GGCTTAAGGA GAAATCTTGT GAAGTCTCTG TCATCTACAC 1800 TGGGTCATCA GTGGAGGATA CAAACTCAGA TGAGTCCACT AAGGGTTTCG ATGACAAGGA 1860 AGAATCTGAA ATCACCGTAG AATGCCTTAA CAAGAGGCCA GACCTCAAAG AGCTAGTGAG 1920 ATCAGAGATC AAATTGTCAG AACTCGAGAA CAACAACATC ACTTTCTACT CATGCGGACC 1980

AGCGACTTTC AATGACGACT TTAGGAATGC AGTTGTACAA GGTATCGATT CTAGTCTGAA 2040

GATAGATGTC GAACTAGAGG AGGAGAGTTT TACTTGGTAA GAGCTCAAGC TT 2092

SEQ ID No.: 2

Length: 687

Type : amino acids

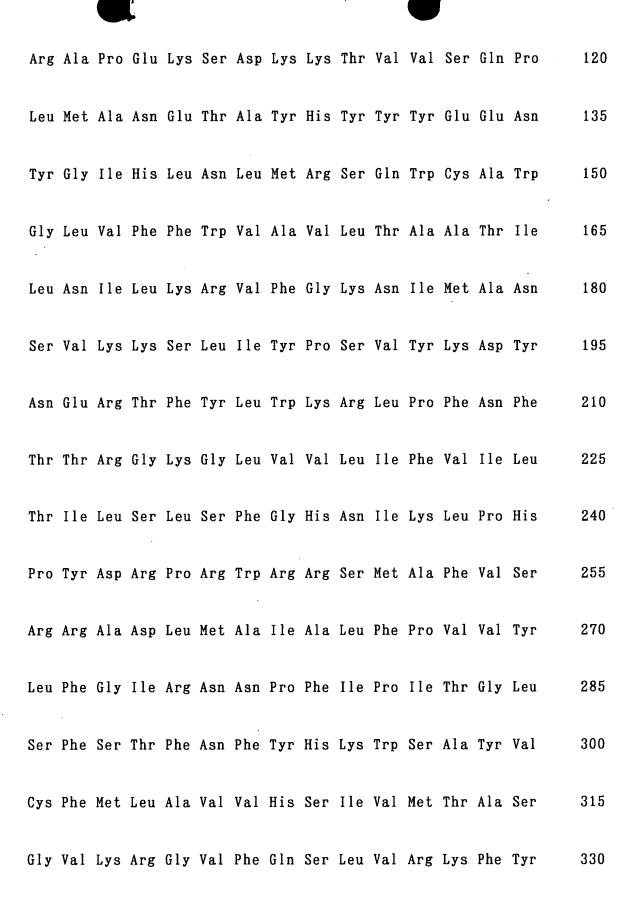
Topology : linear

Molecular type: protein

Original Source

Organism: yeast

Met	Val	Arg	Thr	Arg	Val	Leu	Phe	Cys	Leu	Phe	Ile	Ser	Phe	Phe	.15
Ala	Thr	Val	Gln	Ser	Ser	Ala	Thr	Leu	Ile	Ser	Thr	Ser	Cys	Ile	30
Ser	Gln	Ala	Ala	Leu	Tyr	Gln	Phe	Gly	Cys	Ser	Ser	Lys	Ser	Lys	45
Ser	Cys	Tyr	Cys	Lys	Asn	Ile	Asn	Trp	Leu	Gly	Ser	Val	Thr	Ala	60
Cys	Ala	Tyr	Glu	Asn	Ser	Lys	Ser	Asn	Lys	Thr	Leu	Asp	Ser	Ala	75
Leu	Met	Lys	Leu	Ala	Ser	Gln	Cys	Ser	Ser	Ile	Lys	Val	Tyr	Thr	90
Leu	Glu	Asp	Met	Lys	Asn	Ile	Tyr	Leu	Asn	Ala	Ser	Asn	Tyr	Leu	105



Phe	Arg	Trp	Gly	Ile	Val	Ala	Thr	Ile	Leu	Met	Ser	Ile	Ile	Ile	345
Phe	Gln	Ser	Glu	Lys	Val	Phe	Arg	Asn	Arg	Gly	Tyr	Glu	Ile	Phe	360
Leu	Leu	Ile	His	Lys	Ala	Met	Asn	Ile	Met	Phe	Ile	Ile	Ala	Met	375
Туг	Tyr	His	Cys	His	Thr	Leu	Gly	Trp	Met	Gly	Trp	Ile	Trp	Ser	390
Met	Ala	Gly	Ile	Leu	Cys	Phe	Asp	Arg	Phe	Cys	Arg	Ile	Val	Arg	405
Ile	Ile	Met	Asn	Gly	Gly	Leu	Lys	Thr	Ala	Thr	Leu	Ser	Thr	Thr	420
Asp	Asp	Ser	Asn	Val	Ile	Lys	Ile	Ser	Val	Lys	Lys	Pro	Lys	Phe	435
Phe	Lys	Tyr	Gln	Val	Gly	Ala	Phe	Ala	Tyr	Met	Tyr	Phe	Leu	Ser	450
Pro	Lys	Ser	Ala	Trp	Phe	Tyr	Ser	Phe	Gln	Ser	His	Pro	Phe	Thr	465
Val	Leu	Ser	Glu	Arg	His	Arg	Asp	Pro	Asn	Asn	Pro	Asp	Gln	Leu	480
Thr	Met	Tyr	Val	Lys	Ala	Asn	Lys	Gly	Ile	Thr	Arg	Val	Leu	Leu	495
Ser	Lys	Val	Leu	Ser	Ala	Pro	Asn	His	Thr	Val	Asp	Cys	Lys	Ile	510
Phe	Leu	Glu	Gly	Pro	Tyr	Gly	Val	Thr	Val	Pro	His	Ile	Ala	Lys	525
Leu	Lys	Arg	Asn	Leu	Val	Gly	Val	A'l a	Ala	Gly	Leu	Gly	Val	Ala	540
Ala	Ιlρ	Tvr	Pro	His	Phe	Val	G111	Cvs	Leu	Arø	Len	Pro	Ser	Thr	555

Asp	Gln	Leu	Gln	His	Lys	Phe	Tyr	Trp	Ile	Val	Asn	Asp	Leu	Ser	570
His	Leu	Lys	Trp	Phe	Glu	Asn	Glu	Leu	Gln	Trp	Leu	Lys	Glu	Lys	585
Ser	Cys	Glu	Val	Ser	Val	Ile	Tyr	Thr	Gly	Ser	Ser	Val	Glu	Asp	600
Thr	Asn	Ser	Asp	Glu	Ser	Thr	Lys	Gly	Phe	Asp	Asp	Lys	Glu	Glu	615
Ser	Glu	Ile	Thr	Val	Glu	Cys	Leu	Asn	Lys	Arg	Pro	Asp	Leu	Lys	630
Glu	Leu	Val	Arg	Ser	Glu	Ile	Lys	Leu	Ser	Glu	Leu	Glu	Asn	Asn	645
Asn	Ile	Thr	Phe	Tyr	Ser	Cys	Gly	Pro	Ala	Thr	Phe	Asn	Asp	Asp	660
Phe	Arg	Asn	Ala	Val	Val	Gln	Ġly	Ile	Asp	Ser	Ser	Leu	Lys	Ile	675
Asp	Val	Glu	Leu	Glu	Glu	Glu	Ser	Phe	Thr	Trp	***				687

Length: 17

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

Length: 24

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

ACACTTATTA GCACTTCATG TATT

24

SEQ ID No.: 5

Length: 83

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

GAATTCTCTA GACTCCACCA	TGGTTAGAAC	CAGAGTCCTT	TTCTGCCTCT	TCATCTCTTT	60

CTTCGCTACA GTCCAATCGA GCG

83

SEQ ID No.: 6

Length

: 83

Туре

: nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

SEQ:

GTCCAATCGA GCGCTACACT CATCTCCACT TCATGCATTT CTCAGGCTGC ACTGTACCAG 60

TTCGGATGCT CAAGCAAGTC AAA

83

SEQ ID No.: 7

Length

: 83

Type

: nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

CAAGCAAGTC AAAGTCTTGC TACTGCAAGA ACATCAATTG GCTCGGAAGC GTCACTGCAT 60

GCGCTTATGA GAACTCCAAA TCT 83

SEQ ID No.: 8

Length: 83

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

SEQ:

TCCAGTGTGT AAACCTTGAT ACTTGAGCAT TGGCTGGCAA GTTTCATCAA AGCGGAGTCC 60

AGAGTCTTGT TAGATTTGGA GTT

83

SEQ ID No.: 9

Length: 83

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

TGTCTTCTTA TCGGATTTCT CAGGAGCGCG AAGGTAGTTA CTTGCATTAA GGTAGATGTT 60

CTTCATGTCC TCCAGTGTGT AAA

83

SEQ ID No.: 10

Length: 83

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

GGATCCCATA GTTTTCCTCA TAGTAGTAGT GATAGGCCGT CTCATTTGCC ATCAACGGTT 60

GTGAAACAAC TGTCTTCTTA TCG

83

Length: 80

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

SEQ:

GGATCCACTT GAATTTGATG CGATCTCAAT GGTGCGCATG GGGCCTCGTC TTCTTCTGGG 60

TCGCAGTCCT TACCGCCGCA

80

SEQ ID No.: 12

Length: 80

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

CCTTACCGCC GCAACTATCT TGAACATTCT CAAACGCGTA TTCGGCAAGA ACATTATGGC 60

AAATTCTGTT AAGAAGTCTC

80

SEQ ID No.: 13

Length: 80

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

SEQ:

GTTAAGAAGT CTCTTATCTA CCCAAGCGTT TACAAAGACT ACAACGAGAG AACTTTCTAT 60

CTTTGGAAAC GTTTGCCATT

80

SEQ ID No.: 14

Length: 80

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

AGAGTGAGAG AATAGTCAGA ATGACAAAGA TAAGAACTAC GAGTCCTTTG CCTCGAGTTG 60

TAAAGTTGAA TGGCAAACGT 80

SEQ ID No.: 15

Length: 80

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

AATGCCATTG ATCTTCTCCA TCTAGGTCTA TCGTAAGGAT GTGGCAACTT GATGTTATGT 60

CCGAAAGAGA GTGAGAGAAT 80

SEQ ID No.: 16

Length: 80

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

SEQ:

TCCGGATACC GAAAAGGTAC ACCACGGGGA AAAGAGCGAT TGCCATCAAG TCAGCACGGC 60

GTGAGACGAA TGCCATTGAT

80

SEQ ID No.: 17

Length: 83

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

TCCGGAACAA CCCCTTCATC CCAATCACCG GATTGAGCTT TAGTACTTTC AACTTTTACC 60

ACAAATGGTC AGCATACGTC TGC

83

Length: 83

Type : 1

: nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

GCATACGTCT GCTTCATGTT AGCCGTCGTC CATTCAATCG TTATGACCGC TTCAGGAGTT 60

AAACGAGGAG TATTCCAGTC TCT

83

SEQ ID No.: 19

Length: 83

_

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

TATTCCAGTC TCTTGTAAGG AAATTCTACT TCAGATGGGG AATAGTAGCC ACAATTCTTA

TGTCCATCAT CATTTTCCAG TCC

83

SEQ ID No.: 20

Length: 83

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

ATAAACATGA TGTTCATGGC TTTGTGAATA AGTAAGAAGA TTTCATAACC TCGGTTCCTG 60

AAGACCTTCT CGGACTGGAA AAT

83

SEQ ID No.: 21

Length: 83

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

GAGGATGCCA GCCATGGACC AGATCCAGCC CATCCATCCT AGTGTGTGGC AATGGTAATA 60

CATAGCTATG ATAAACATGA TGT 83

SEQ ID No.: 22

Length: 83

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

SEQ:

GTCGACAAAG TGGCGGTCTT AAGACCTCCG TTCATGATGA TACGTACAAT TCGGCAGAAC 60

CTGTCGAAGC AGAGGATGCC AGC

83

SEQ ID No.: 23

Length: 82

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

SEQ:

GTCGACCACA GATGATTCTA ACGTTATCAA GATCTCTGTC AAGAAGCCTA AGTTCTTCAA 60

GTATCAAGTG GGAGCATTTG CC

82

SEQ ID No.: 24

Length: 82

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

SEQ:

GGAGCATTTG CCTATATGTA CTTTCTTTCA CCAAAATCAG CCTGGTTCTA CAGTTTTCAA

TCTCATCCCT TCACAGTCCT AT

82

Length: 82

Type : nucleic acid

Strandness: single Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

SEQ:

TTCACAGTCC TATCAGAAAG GCACAGAGAT CCTAACAACC CAGATCAACT AACTATGTAC 60

GTCAAAGCTA ACAAGGGCAT TA

82

SEQ ID No.: 26

Length: 82

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

Length

: 82

Type

: nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

GGCCCGCAGC TACTCCTACT AGATTTCTCT TAAGTTTGGC AATGTGAGGG ACAGTTACGC 60

CATATGGTCC CTCTAAGAAA AT

82

SEQ ID No.: 28

Length: 82

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

CTGCAGTTGA TCA	GTGCTAG	GCAATCTAAG	GCATTCTACG	AAATGGGGGT	AGATGGCTGC	60
----------------	---------	------------	------------	------------	------------	----

CACGCCGAGG CCCGCAGCTA CT

82

SEQ ID No.: 29

Length: 77

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

CTGCAGCACA AGTTCTACTG GATCGTCAAC GACCTTAGTC ACCTTAAGTG GTTCGAAAAC 60

77 GAGCTACAAT GGCTTAA

SEQ ID No.: 30

Length: 77

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

ACAATGGCTT AAGGAGAAAT CTTGTGAAGT CTCTGTCATC TACACTGGGT CATCAGTGGA 60

GGATACAAAC TCAGATG 77

SEQ ID No.: 31

Length: 77

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

CAAACTCAGA TGAGTCCACT AAGGGTTTCG ATGACAAGGA AGAATCTGAA ATCACCGTAG 60

AATGCCTTAA CAAGAGG

77

SEQ ID No.: 32

Length: 77

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

GTGATGTTGT TGTTCTCGAG TTCTGACAAT TTGATCTCTG ATCTCACTAG CTCTTTGAGG

77

60

TCTGGCCTCT TGTTAAG

SEQ ID No.: 33

Length: 77

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature :

Name/Key: primer bind

SEQ:

CGATACCTTG TACAACTGCA TTCCTAAAGT CGTCATTGAA AGTCGCTGGT CCGCATGAGT

AGAAAGTGAT GTTGTTG

77

60



7

SEQ ID No.: 34

Length: 77

Type : nucleic acid

Strandness: single

Topology : linear

Molecular type: other nucleic acid

synthetic DNA

Feature

Name/Key: primer bind

SEQ:

AAGCTTGAGC TCTTACCAAG TAAAACTCTC CTCCTCTAGT TCGACATCTA TCTTCAGACT 60

AGAATCGATA CCTTGTA 77